

Southern Oregon Northern California Coast Coho salmon

Hatchery Program Assessment

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Southern Oregon Northern California Coast coho ESU

- SONCC coho included in the ESU
 - Rogue natural fish and Cole Rivers hatchery program
 - Klamath natural fish and Iron Gate hatchery program
 - Trinity natural fish and Trinity hatchery program
 - Several other natural populations in OR and CA.
- SONCC coho NOT included in the ESU
 - None

Southern Oregon Northern California Coho ESU programs

Cole M. Rivers Hatchery

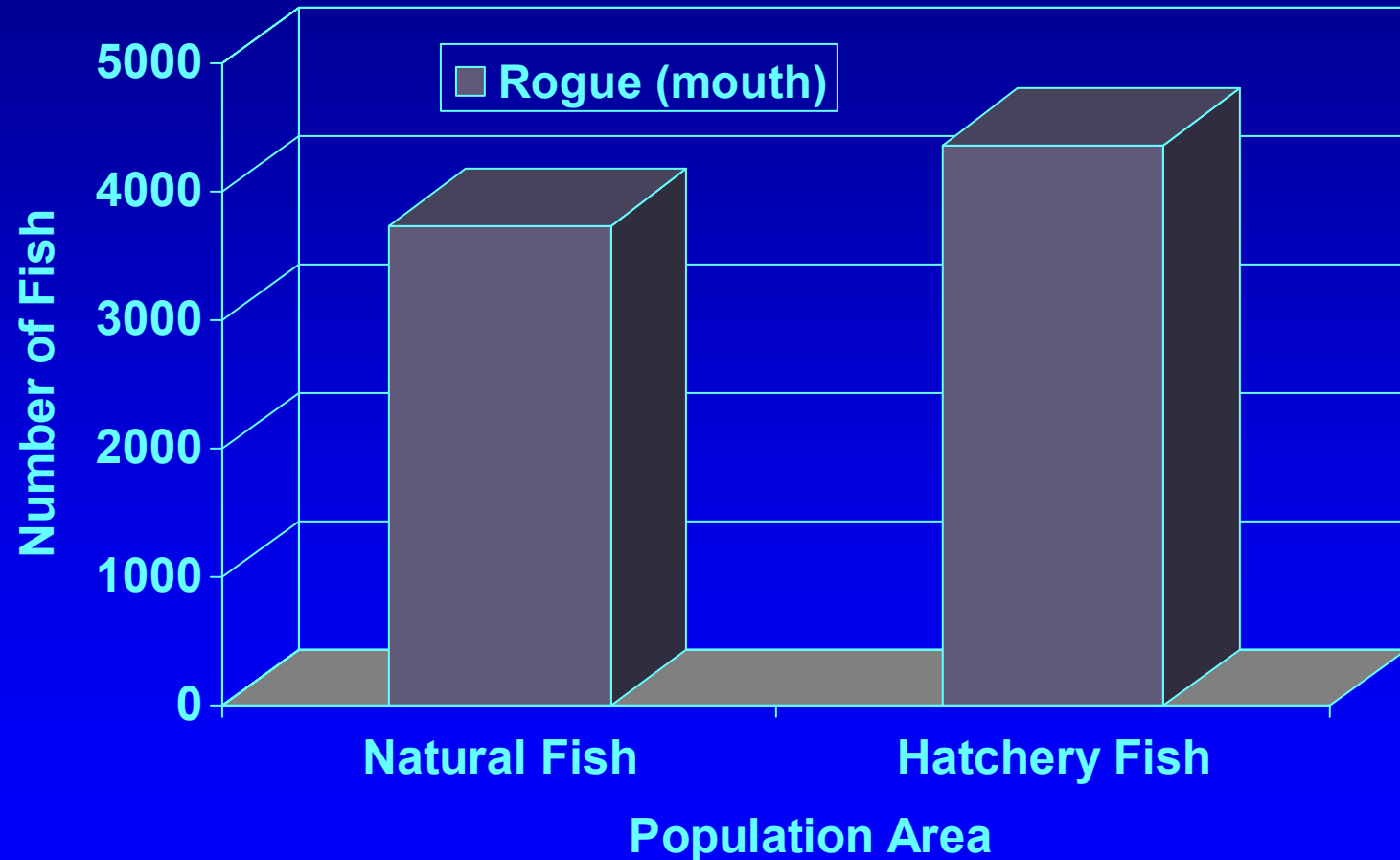
Iron Gate Hatchery

Trinity River Hatchery

SONCC Coho ESU

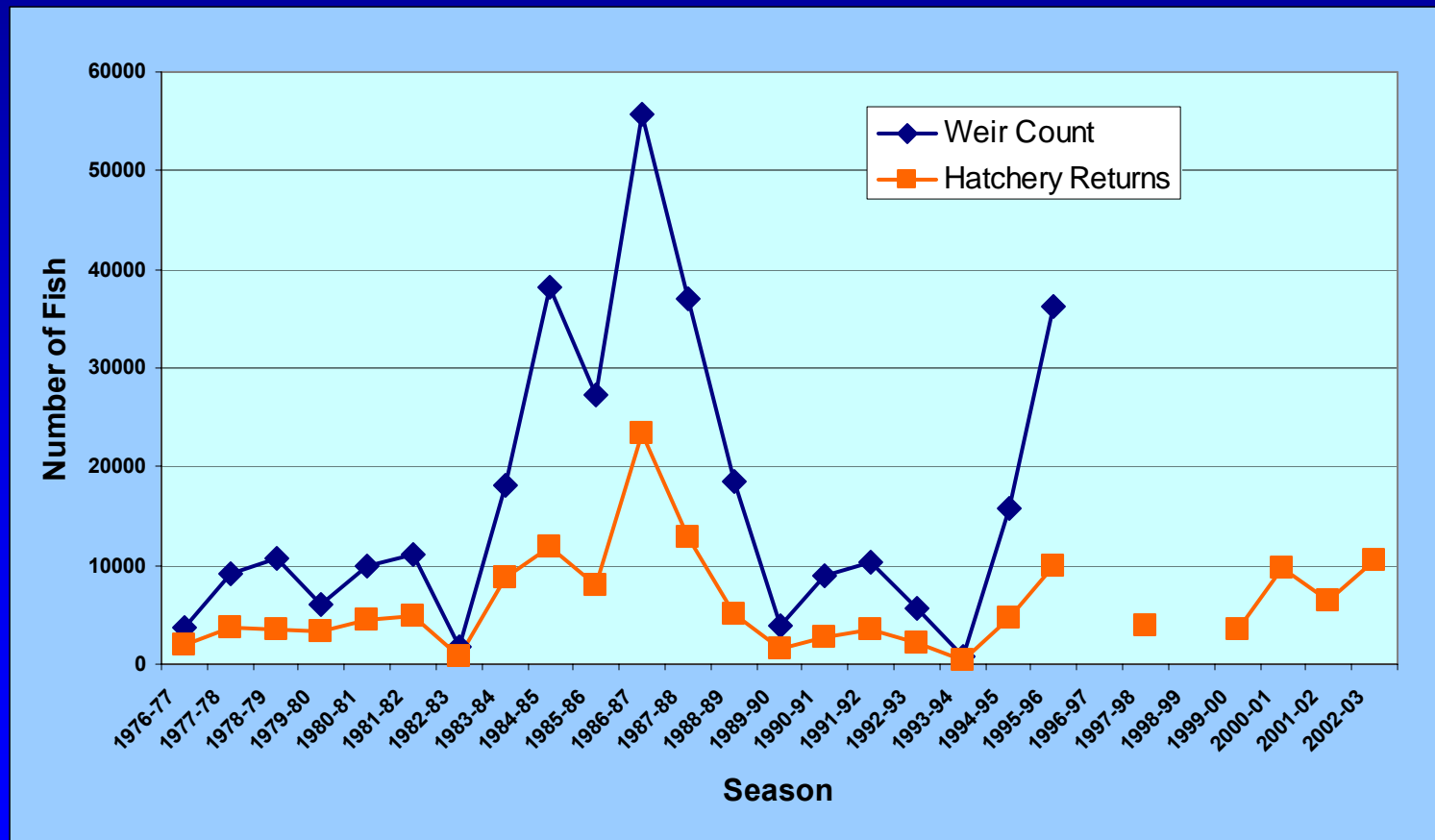
Population area (hatchery stock)	Isolated or integrated	Program type	Purpose	Production goal	Year initiated
Artificial Propagation Programs that Produce Fish Included in ESU					
Rogue River (Cole Rivers)	Integrated	Smolt	Mitigation	200,000	1974
Klamath River (Iron Gate)	Integrated	Smolt	Mitigation	75,000	1965
Trinity River (Trinity)	Integrated	Smolt	Mitigation	500,000	1960

Population Area Abundances

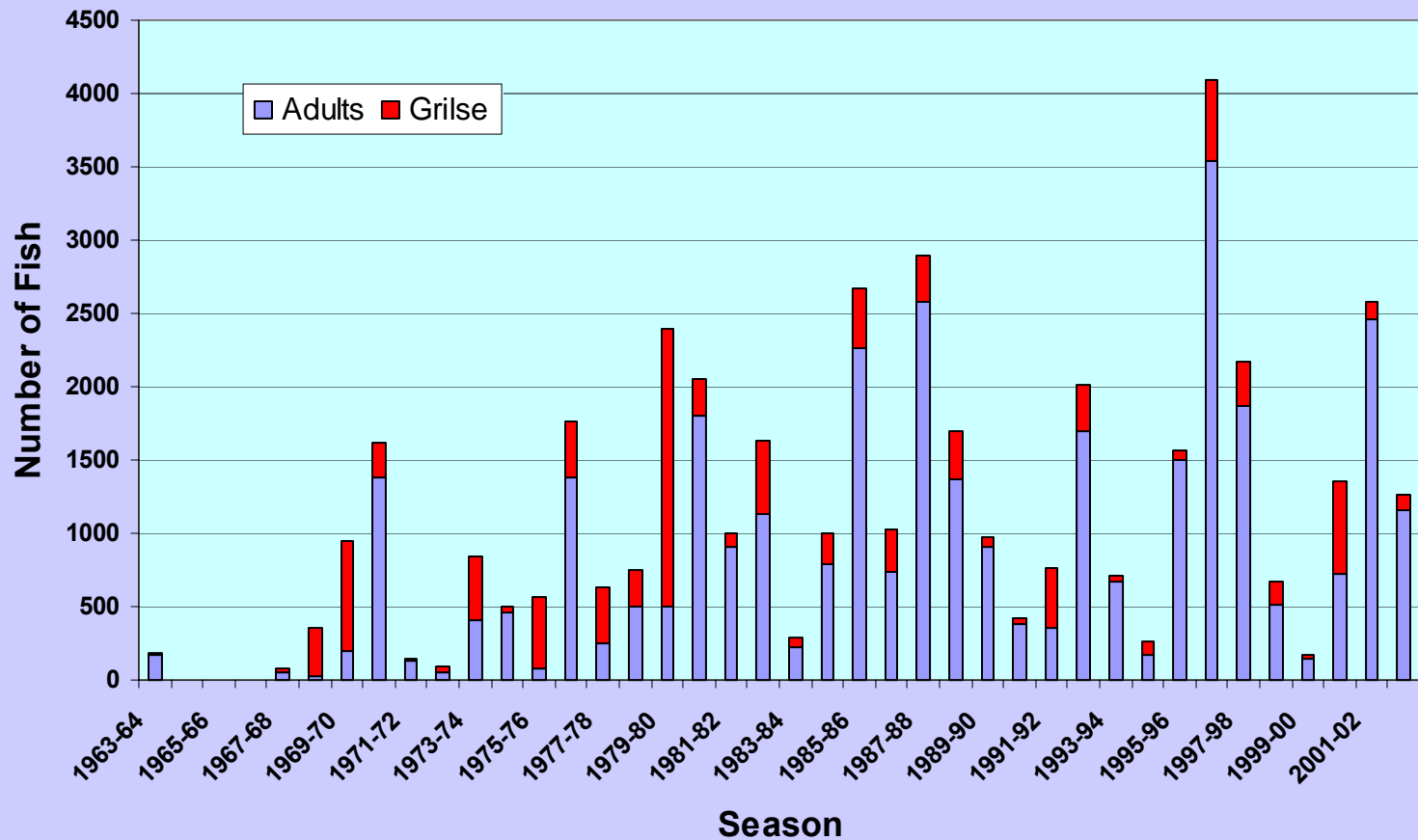


Estimated mean number of fish 1980-2003.

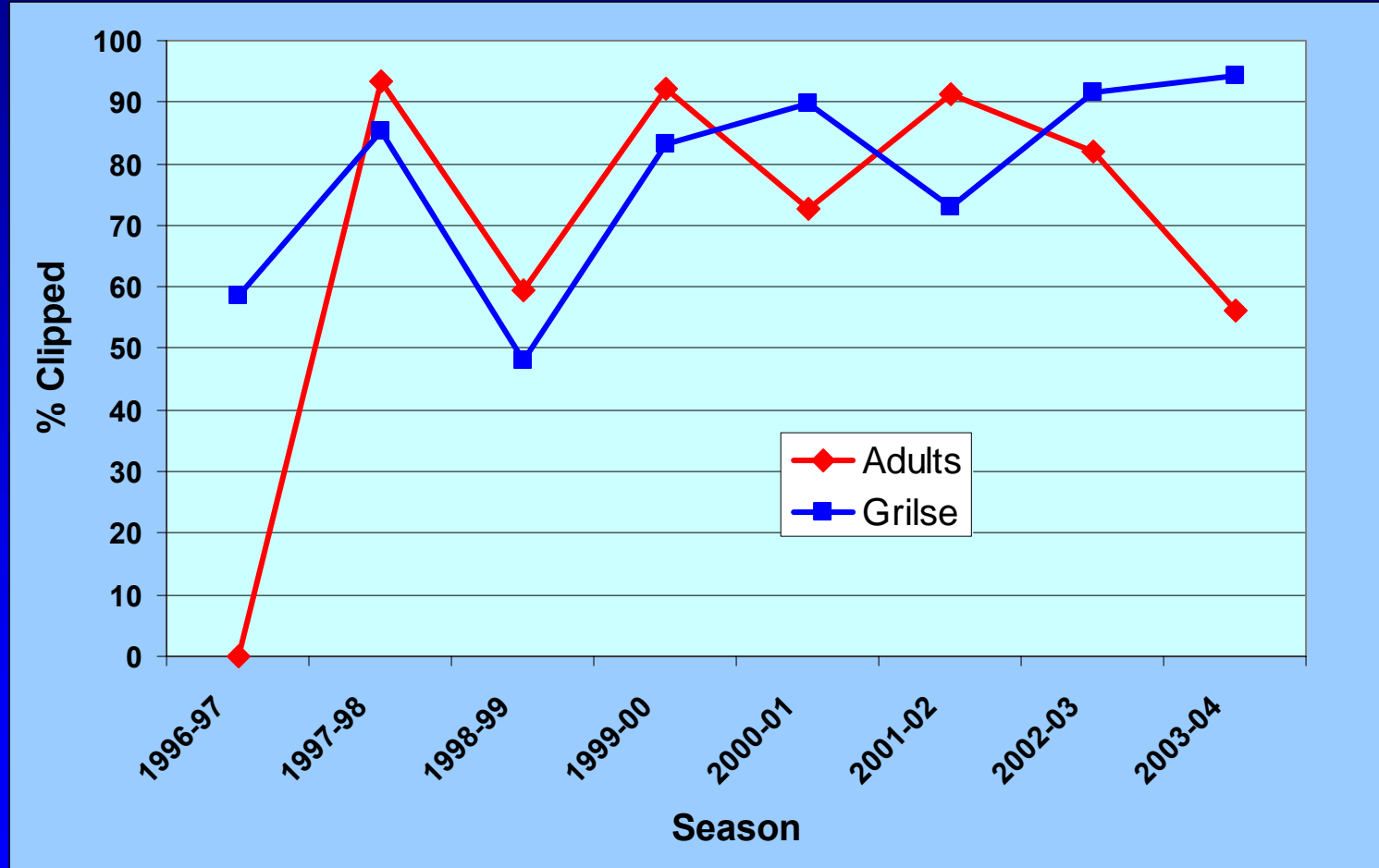
Trinity River Hatchery Coho Salmon Escapement, 1977-2003



Coho Salmon Returns to Iron Gate Hatchery, 1963-2003



Percentage of Adipose-Clipped Coho Salmon Returns to IGH



“The effects of hatchery fish on the likelihood of extinction of an ESU, depend on how hatchery fish affect four key attributes”

Viabale Salmon Populations

Abundance

Productivity

Spatial Structure

Diversity

Effect on Abundance

- Some benefit of the hatchery stocks that are included in the ESU on the total abundance of 3 populations.
- Few hatchery fish spawning naturally in some rivers. Trinity River dominated by naturally spawning hatchery fish.
- Trinity River Hatchery fish could serve as a “reserve” for future recovery or reintroduction efforts.

Effect on Productivity

- Little to no benefit on the productivity of the ESU from hatchery fish.
- Only three rivers throughout the ESU have hatchery program influences.
- Natural runs depressed throughout ESU (not just where hatchery programs exist).

Effect on Spatial Structure

- Some populations negatively affected by the operation of hatchery facilities and weirs.
- Tailwaters of dams comprise last available spawning habitat for fall-run coho salmon in the Trinity River.
- The rate of population divergence has accelerated with radical decline in coho salmon abundance, due to acceleration in genetic drift and reduction in the absolute number of migrants between watersheds.
- Many previous stock transfers were unsuccessful owing to reduced fitness of hatchery fish.

Effect on Diversity

- Klamath River Stock Identification Committee categorized Klamath and Trinity Rivers coho salmon as a single metapopulation due in part to hatchery introductions and intrabasin transfers.
- Possible domestication effects on natural fish due to heavy hatchery influence.
- Little infusion of natural genes in TRH fish.
- Possible introgression by straying out-of-basin hatchery fish.
- Historical reciprocal transfers of SONCC and CCC stocks; inter-basin plants from WA and OR stocks.
- Release of hatchery-spawned coho/Chinook salmon progeny by personnel (erosion of gene pool).

Effect of Artificial Propagation on VSP Attributes SONCC Coho Salmon

Viability Criteria	BRT VSP Risk Score	Decreases Risk	Neutral or Uncertain	Increases Risk
Abundance	3.8	✓		
Productivity	3.5		✓	
Spatial Structure	3.1		✓	
Diversity	2.8		✓	

Recommendation: No Change to BRT's Finding

What is the biological status of the ESU in total (including hatchery stocks/populations, mixed populations, and natural populations)?

SONCC coho	Biological Status for the ESU in-total		
	“in danger of extinction throughout all or a significant portion of its range”	“likely to become endangered within the foreseeable future throughout all or a significant portion of its range”	Neither “in danger of extinction...” or “likely to become endangered...”
BRT’s findings for the ESU natural components	22%	67%	11%